The Old School, Brewhouse Hill, Wheathampstead,
Hertfordshire AL4 8AN, UK
www.ufaw.org.uk

Animal Welfare 2021, 30: 393-407
ISSN 0962-7286
doi: 10.7120/09627286.30.4.003

Integrative surveillance of cattle welfare at the abattoir level: Risk factors associated with liver condemnation, severe hoof disorders, carcase bruising and high muscle pH

N Losada-Espinosa[†], LX Estévez-Moreno[‡], M Bautista-Fernández[†], H Losada[§], GA María[‡] and GC Miranda-de la Lama*[‡]

[†] Graduate Program in Sciences of Animal Health and Production, Faculty of Veterinary Medicine, National Autonomous University of Mexico, UNAM, Mexico
[‡] Department of Animal Production and Food Science, IA2 Institute, University of Zaragoza, Zaragoza, Spain
[§] Department of Reproductive Biology, Metropolitan Autonomous University, UAM-Iztapalapa, Mexico
* Contact for correspondence: genaro@unizar.es

Abstract

Given the multi-dimensionality of animal welfare, any monitoring system for slaughter animals should comprise an integrative vision that facilitates animal welfare and food safety assessment. Thus, the aim of this study was to investigate risk factors as possible causes for liver condemnations, hoof disorders, bruise prevalence, and the quality of beef carcases under commercial operating conditions in Mexico. Data were recorded for 143 journeys encompassing 1,040 commercial cattle, originating from feedlots, free-range, and dairy production systems. Details on journey distance, vehicle type, cattle type, and animals' origin were gathered from abattoir reports. We found that carcase bruising (41%) and hoof disorders (43.9%) had the highest prevalence, regardless of the production system. Variables such as cattle type and production system influenced liver condemnations; old bulls extensively raised were more prone to present parasitosis such as Fasciola hepatica. *Transportation conditions (journey distance, vehicle type) and cattle type might have influenced the development of hoof disorders in the evaluated animals. Multivariable logistic regression showed that animals' origin was a potential risk factor for severe bruising and high muscle pH, with cull dairy cows getting the most serious damage. In general, cattle transport conditions were factors that showed interactions with three of the evaluated indicators (severe hoof injuries, carcase bruising, meat pH24h). Our study shows the need to implement integrative surveillance to identify risk factors according to the production system from which the animals originate. With this information it is possible to develop strategies to mitigate specific cattle welfare problems.*

Keywords: *animal welfare, cattle, indicators, meat quality, risk factors, voluntary abattoir surveillance*